Chapter 5

ADVENT OF IRON IN THE OLD WORLD AND THE MOVEMENT OF THE ARYANS

A. Introductory — A Probable Source from which the Painted Grey Ware was imbibed in its Bearer on its Adoption of Iron. — The Painted Grey Ware pottery, a very distinctive ceramic ware, now shown as of Aryan workmanship, also represents the earliest cultural complex after the one using the so-called 'ochre coloured pottery' at Hastinapura.

The distribution map of the Painted Grey Ware shows clearly its northern bias and the trend of movement or spatial expansion. The tendency of the ware is seen to become simplified, the farther it proceeds towards the peripheral areas, as seen at Ujjain or Kausambi. At Sravasti the evidence shows that the basic ceramic ware of the next succeeding cultural phase in India derives itself from this ware, and both are produced under the same reducing conditions of firing.

As to the source of inspiration of the Painted Grey Ware, a question would naturally arise if it was evolved in India or brought from outside. Lal in his endeavour to trace its antecedents have cited several sites outside India, where similar or allied ceramics have been found, namely, Tsani, Tsangli and Zerila in Thessaly (Greece) Shah Tepe and a site to the
to the south of Lake Urmia in Iran, and in Sistan which are assignable very broadly to the second millennium B.C. B.K. Thapar has recently brought to light a few more sites where pottery of allied nature has been found, though an interconnection among them all is neither suggested nor as yet possible to trace. At the same time it is held that the Painted Grey Ware was, at the time of its introduction into India, fully developed as the result of a long established tradition.

The occurrence of the Painted Grey Ware in Lakhyopir in Pakistan has extended the frontiers of the ware and adds to the argument for its Aryan affiliation. It is clear, nevertheless, that an extraneous source of development of this ware is yet difficult to establish.

(b) Shahi-tump as the source of the Painted Grey Ware. S.C. Ray has recently pointed out that the material evidence of the cultural equipments of the Aryan culture, as revealed in the Vedas, has not been found anywhere, inspite of almost ceaseless search for them over the years. In this context, it is more likely, especially in ceramics, that they adopted the equipments of the region in which they settled. Such a practical experience has been referred to by Stuart Piggott in respect of the obvious 'conquerors' of the Indus civilization, as shown by the finds in the graves of Shahi-tump. The basic ceramic of Shahi-tump was a painted grey ware, and a possible connection
between this ware and the more widely distributed Painted Grey Ware, associated with the Aryans, is easy to see or concede. If so, there is no difficulty to explain how it was imbibed.

Heine-Geldern's view of several tribes other than the Aryans sharing in the invasion of India accords well with Wheeler's interpretation of the phenomenon of multiplicity of limited cultural traits in the post-Harappan epoch as "cultural fragmentation" as well as with Stuart Piggott's 'conquerors'.

One of these 'conquerors' had obviously produced and employed a painted grey ware at Shahi-tump. It was an attractive enough ceramic ware to lend itself to emulation by contemporary folks, and may have been the possible source from which the Painted Grey Ware in general in the northern plains of India were derived by the Aryan tribes. This possibility would time the inculcation of the ceramic tradition at the moment when the main Aryan mass may have come into contact with the Shahi-tump people. On the present showing it should appear fairly early, almost at the very beginning of the career of the Aryan settlement in India.

(c) Use of the Painted Grey Ware in the Sarasvati-Drisadavati Valley in Bikaner, possibly before the Entry of the Aryans into the Ganga-Yamuna Plains. At any rate they used the Painted Grey Ware from the moment of their settling down in the Ganga-Yamuna plains. The Rigveda itself mentions that these two eastern rivers and also the defeat of the Dasas under the .....

.........
leadership of Bheda on the bank of the Yamuna. The settlement of the Ganga, therefore, should have taken place in the post-Rigveda phase. But even the Bikaner sites on the Sarasvati and Drisadvati, which marked the earlier home of the Aryans before their entry into the Ganga-Yamuna plains, have yielded the Painted Grey Ware ceramic. Here again, the Painted Grey Ware is the only ceramic ensemble other than the earlier Harappan remains. These factors again are significant in the endeavours to equate the Aryans with the Painted Grey Ware, as well as to assign it a date.

(d) Possession by the 'conquerers' of weapons superior to those of the Harappans.—By a logical extension of the conceded possibility of the Aryans bringing no pottery tradition of their own or material equipments of any kind, they should be, strictly speaking, deprived of even their weapons. But the fact of history is against such a possibility. As successful settlers in 'fresh fields and pastures new' they could not but be fully armed, naturally, in the tradition of the home or homes in which they had previously lived. The natural sense of superiority of their fighting equipment would instinctively dissuade them from accepting anything in the order inferior to their own. But for the possession by the conqueror of a superior lighting equipment, the forlorn skeletons in Mohenjo-daro, with the slashes of the swords cut
deeply into the bones, would not be explicable, notwithstanding the other marks of desertion and desolation.

Of the mass of armour, that they must have brought with them, there is hardly anything found. The bronze equipments with West Asian affinities, circumstantially attributed to their contemporaries, are the only ones to suggest a link indeed with the West for the moment, and they cannot, with certainty, be attributed to the Aryans either. But there can be no doubt that they did bring some armour with themselves. The absence of evidence, either in respect of copper or bronze or even of iron, does not prove or disprove any probable theory, considering the extensive damage that these objects can suffer from oxidation or decomposition, not to speak of inadequacy of exploration.

(e) Improbability of a Retrograde Appeal to Weapons of Copper in preference to known ones of Bronze and, even, Iron proves the point. — That the material equipments of the conquered did not interest them, nor inspire them to adopt or introduce anything superior or even equal or alike, is amply clear from the accumulative archaeological evidence of the subsequent periods. The end of the great civilization was marked by a reorientation of tastes that no longer revelled in the urban delights of Harappa, Mohenjo-daro, Lothal or Kalibangan. The circumstances speak for a supreme indifference to material life. Nevertheless, it cannot be accepted that the Aryan victors of the Harappans penetrated as far east as Ranchi in Bihar, to evolve a
flourishing industry of copper after their own experience of bronze, and, as will be shown, of iron, which should have been superior to the bronze equipments of those whom they had defeated, no doubt, in battle.

(f) Source from which Iron was adopted by the Users of the Painted Grey Ware. - The association of iron with the Painted Grey Ware, and, therefore, with the Aryans has been seen. The question that remains to be answered is whether iron was discovered afresh in India or the Aryans had a reasonable chance of being acquainted with it while still on their way, away from India. The question is more complicated than it sounds, for it is bound up with the emergence of iron in the old world, especially in the Near East, and the larger question of the movement of the Aryans from their ancient home and possible contacts between the two. If it could be shown that the Aryans had come into contact with iron at any stage of their peregrination prior to their emergence within the bounds of the subcontinent, it could be reasonably inferred that it should have been possible for them to arrive with an idea of its efficacy and its technology, if not actual specimens of objects in this metal. In any case it would not take them some time to settle down in the new land, look for the ores and start manufacturing objects of iron on their own. In such a situation they would owe it to themselves, as agents of an earlier tradition, in so far as it affected India, and at a much earlier state-
earlier date than when the Persian could have brought it to India as a gift towards the end of the sixth century B.C., or, in the alternative, they should have evolved it themselves in India. On the present showing, however, they should surely have started smelting and manufacturing iron objects in India some time before circa 800 B.C., and the possible source from where iron was adopted lay, in all likelihood, in West Asia.

B. Advent of Iron in the Ancient World

(i) General. - To decide the question of its possible inspiration from West Asia, it would be necessary to trace its evolution in that region, as a connected event in the technological advancement of man, as well as to find the older traces of the Aryans themselves in the neighbouring lands. It is indeed difficult to trace fully the evolution of iron in antiquity, for more than one reason. Firstly, the evidence as yet is too scanty, and, secondly, there is many a lacuna in the way of weaving a fully connected account. An endeavour, however, will be made to present the main outlines of the archaeological evidence on the antiquity of iron in the old world, especially in the Near East, in its bearing on its inspiration and influence in India.

It is perhaps not possible to pin down in antiquity the earliest discovery of the process of extracting iron from its ores by smelting. It is generally admitted, however, that the successful smelting of iron ore was achieved as a result of the earlier and long tradition and experience of smelting copper, which emerged earlier in human use in general than iron.
In the production of iron by the direct process. These are as follows:

(i) The ores to be smelted must be sufficiently protected by the fuel bed against rapid oxidization which would be caused by contact with an excess of iron.

(ii) Some sort of a smelting furnace is required. The furnace may be with or without induced draught.

(iii) The furnace temperature must be high enough to enable the metal to reach a semifused or plastic condition so that a workable bloom be obtained.

He further states that some of the early pottery furnaces, such as those that produced the Tell Halaf pottery could achieve the temperature of 1000-1100°C, and these may have played an important role in the early smelting of iron.

Professor William Gowland, however, found that the simplest process of producing malleable iron from its ores was with a charcoal fire, and secondly, that the temperature needed to reduce iron was only 700-800°C, while the temperature that was required to smelt copper was about 1100°C. It was not, therefore, difficult for those experienced in copper smelting to reduce iron ores at a lower temperature.

Coghlan points out, however, following Richardson, that even though it is possible to extract iron from ores at temperatures ranging from 700°C to 800°C, in the form of small solid grains, the resultant smolten liquid obtained at the temperature range of 1000°C to 1150°C, becomes really suitable for working and forging. At
any intermediate temperature the smelt remains in a comparatively unforgable state.

It is indeed tortuous to trace the evolution of iron smelting furnaces, in view of the limited archaeological evidence, which, if at all recognized, is often inordinately mutilated. It may be incidentally mentioned, however, that it has been possible to infer that there were three different types of early furnaces, namely, (a) the simple bowl furnace, (b) the domed furnace, and, (c) the shaft furnace.

As regards the antiquity of the use of metallic iron obtained as a result of the smelting of iron ores, the archaeological evidence takes it back to the third millennium B.C. The evidence is summarized below.

(ii) Iraq (Mesopotamia).—The earliest datable evidence of iron is provided by a fragment of man-made iron at Tell Chagar Bazar in north Syria in level V, dated by the excavator to circa 2700 B.C. Two fragments of iron from level III were dated to circa 2500 B.C. These incidentally indicated that Habur was a very early centre for the working of iron.

An iron blade with a bronze hilt was found at Tell Asmar in Iraq and dated by the excavator between 2450 and 2340 B.C. A bronze blade with an iron hilt from Yorgan, 1600-1375 B.C., and a fragment of iron from Mari near the remains of the
The pre-Sargonid temple of the Ishtar and iron tools and weapons of the Kassite period from Tell Halaf provide the evidence of the use of iron in the second millennium B.C. in Iraq.

Though Tighlath Pileser (1120-1100 B.C.) takes pride in killing four buffaloes in the Mitanni kingdom with his bows and iron spear, he had laid the pathway for his troops with bronze shovels and axes. This only indicates the still limited uses to which iron was then put.

By the time, however, of Sargon II (722-705 B.C.) iron had come very much into vogue, and objects of iron were found in large numbers.

(iii) Syria. In Syria iron was rare before 1500 B.C., but after the middle of the second millennium B.C., the evidence was larger, but the true iron industry began between circa 1300 and 1200 B.C.

A battle axe made of an iron blade (pl.IV) and gold and copper socket found at Ras Shamra has been dated by the excavator from the end of the 15th to the first quarter of the 14th century B.C. It is one of the most crucial evidence that has come to light. Its analysis by Mon. Brun established its character as man-made iron. The use of other metals along with the blade indicated that iron, being a precious metal, was used economically. The presence of the figure of a boar on the "poignard" is sought by the excavator to be explained as the result of its manufacture and use by a non-Semitic people, as this animal was abhorred by the Semites. It is, therefore, attributed to the Mitannians of the north-eastern regions of Syria.
According to the excavator the above mentioned conclusion is confirmed by the find among the Tell-el-Amarna Letters of an epistle from King Dushratta of the Mitannians addressed to Amenophis III (1415-1375 B.C.). The document enumerates the objects of gifts at the wedding of princess-Tushratta with the Egyptian king. These include objects made of a metal called "parzilllu", translated as iron, and accompanying bracelets.

Another letter of the same king of Mitanni mentions bracelets of a similar type as well as a dagger of which the blade is rivetted with gold. The same letter mentions blades of daggers made of a metal called "habalkinnu" which is translated by Knudtzon as "steely". The find of a steel-bladed dagger in the grave of Tutankhamun confirms the correctness of the translation of this word. The word may have an ethnic inspiration and may point to the Chalybes dwelling in the south of the Caucasus.

Schaeffer is of the view that it was the Mitannians who were the first users and producers of iron, and it was through them that it passed to the Egyptians and other people of the Near East. After the conquest of the Mitannians by the Hittites, the trade in iron passed into the hands of the Hittites. It is indicated by the letter of Hattusilis III to another king, differently identified as either of Assyria or Egypt.

The uniform texts found at Boghazkeui, Turkey, point to the ample use of iron by the Hittites during
the 14th and 13th centuries. Schaeffer recalls the similarity between this axe, which he calls as the oldest known axe of iron, with a 'dagger' sculptured among the reliefs in Yazilikaya, near Boghazkoy, of Mitannian origin. It was the possession of the knowledge of iron which had made possible the conquests of the Mitannians between 1600 and 1400 B.C., when they dominated the Near East including Asia Minor, where the Hittites dwelt and later dominated.

In addition to the evidence from Ras Shamra, a gold-plated iron amulet of the period of Amenhotep III found in a royal tomb at Byblis, seven objects of iron, six of which were gold-plated, mentioned in the inventory of the temple of Minegal at Mishrefe-Qatna, destroyed by Suppiluliuma (14th century B.C.), dated prior to Thothmes III i.e., circa 1501-1447 B.C., beads and iron rings from Minet-el-Beida, provide the evidence of the use of iron in Syria in the second millennium B.C.

The Bronze Age in Syria was brought finally to an end by the destruction of the city of Carchemish on the Euphrates by the users of iron from Asia Minor in the 13th century B.C. By about 1100 B.C., the cemetery began to be filled with objects of iron ushering in the full-fledged Iron Age.

Schaeffer has pointed out that the levels in which iron objects have been found at Hama are to be dated to circa 1450-1100 B.C.

O. Johannsen has divided the ancient settlers of Byblos, Sidon and Tyre into seafarers, merchants, colonists, miners and smelters. He has referred to the
dated to circa 1825 B.C., and to a copper plate inscription (2000-1500 B.C.) in which the scribe wrote that he had worked with the "teeth of iron" for the ornamentation of an Egyptian temple at Byblos. These would, no doubt, point to very early dates of the use of iron in Syria, but not of its manufacture, though such a phenomenon in a limited scope, was indeed possible.

But after 1200 B.C., when the Hittites settled in Syria, the manufacture and use of iron in the region became very common.

(iii) Turkey (Asia Minor).- Iron does not seem to have appeared at Troy prior to period IV, in the twelfth century B.C. Georgia and Armenia did not possibly have iron before 1200 B.C. Nevertheless, Asia Minor has been the most fruitful ground for the development of the iron industry in ancient times. The archives of the Hittite empire found at Bogazkale, the capital, throw ample light on the use of iron in the empire from the 20th century B.C. to the 13th century B.C.

The earliest document found here relates to king Anittash of Kussaro who ruled about 1950-1925 B.C. One of the statements attributed to him declares that Purushanda, a defeated prince, brought with him one throne and sceptre of iron, as ordered.

But O.R. Guerney considers that the statement is anachronistic, and, therefore, not much store can be set upon its genuineness. Even if it is assumed that this evidence alone is not enough to prove the point,
there can be no doubt about the existence of a developed iron industry in Asia Minor in the 14th century B.C., with beginnings laid still earlier.

There are several other inscriptive references to the use of iron in Asia Minor in the Hittite periods prior to circa 1200 B.C. One inscription describing the rituals for the foundation of a temple refers to the sources from which various metals such as iron, copper and bronze were brought. Iron described as the black metal came from heaven. It might bear an indirect reference to the meteorites which was the earliest form of iron known.

An exotic dagger with an iron blade found in the tomb of Tutankhamen (c. 1350 B.C.) has been thought to be of Hittite workmanship as the Hittite king Hattusilis III wrote to an Egyptian king, presumably Ramses II (1292-1225 B.C.) in respect of the supply of iron objects. The letter purports to say, "As to the good iron about which thou hast written to me: there is no good iron in my 'sealed house' in Kizzuwatna. It is a bad time to make iron, but I have written (ordering) them to make good iron. So far they have not finished it. When they finish it, I will send it to thee. Behold now, I am sending thee an iron dagger-blade .... which thou hast sent have no blades ....... (I have ordered blades) to be made, but so far, they have not finished them."
The address of the above mentioned letter has been suggested to be Shalmaneser I of Assyria.

This passage has been interpreted to suggest that the metallurgists of Asia Minor enjoyed a monopoly of the production and supply of iron in ancient times and that it was a royal monopoly. Iron was considered also to have been produced in large enough quantities so that it was required to be stored in bond houses. The position of the Hittite monopoly of iron has been assailed by Przeworski.

Notwithstanding the divergence of the interpretation, there is apparently no dispute about the date i.e., the thirteenth century, and the manufacture, storage and export of iron objects on a scale which was apparently fairly large.

Emanuel Laroche has brought together all the epigraphical evidence on the use of iron among the Hittites about the middle of the second millennium B.C., till the break-up of the Hittite empire in about 1200 B.C. in a neat little study of the problem. His studies indicate that during the hegemony of the Hittites iron was better known in their empire than in the rest of contemporary Orient.

The references include the mention of a word AN Bar Mi meaning black iron of heaven, which is, however, less frequent than the other words. The objects mentioned in the inscription display a wide variety consisting of ornaments of idols (SUSA), a
seat (throne), a scepter, plates for engraving inscriptions, statuettes of men (AlamLU), statuettes of women (AlamSal), statuettes of young girls (AlamDumaSal) figurines of bulls (GudMah) or cows, lions (UrMah), pedestals (Falzeha), diverse ornaments, and weapons, tools, objects utilized in the rituals of magic as well in feasts. The diverse objects include lances, scepters, nails and pins. The ritual of foundation enumerates the component objects comprising the places, the tables and a door. A tongue of iron is stated as sanctified by the mouth of the king and queen. Iron is described in these inscriptions as a symbol of strength and force, and is frequently cited in comparison.

This evidence led Laroche to conclude that if iron was not a frequently used metal in Anatolia during the second millennium B.C., it was not limited to ornaments and arms. Divine statuettes and lances of the guards were indeed produced by the Royal Service, but a rich Hittite could easily acquire it in the course of ordinary commercial business. Iron was at this time an article of luxury.

Though iron may not have supplanted the other metals and established its position as the principal metal in the life of man, its manufacture and use, however limited in extent in comparison with the objects
of other metals are amply attested.

Though the Hittite monopoly of the manufacture and distribution of iron objects or their claim to the discovery of the technique of smelting and hardening iron have been questioned, it can, nevertheless, be conceded that the manufacture of hard iron was mastered by the Hittites as early as the middle of the 15th century B.C., as many iron objects of that period have come from Asia Minor.

Schaeffer has drawn the attention to a text mentioned by Hamit Bay, the Director of excavations at Alaca Hüyük, from Kuel Tepe, which speaks of a metal, which, between 2000 and 1950 B.C. was 5 times as dear as gold and 14 times as dear as silver. This would probably mean iron as suggested by Schaeffer. The discovery of objects of iron, of which a dagger was of large dimensions, shows the occurrence of iron at this date, though indeed as a rare phenomenon.

Schaeffer expressed the view that it was probably the metallurgists of Asia Minor that were the first producers of iron in large quantities.

It may be recalled that a band of Hittite invaders destroyed the second city of Troy by about 2400 B.C. After a short time, towards the end of the third millennium B.C., or a little later, fresh invaders destroyed the city and moved to the grassy plains of the Halys basin, and laid the foundations of a Hittite empire. One of the earliest rulers was King Anittash of Kussara, who won a victory over
Pijusti, the ruling king of the land, called Hatti. Anittas ruled between 1950 and 1920 B.C. The conquest meant the settlement of a new people, who, with vicissitudes of fortune, lived in the land till 1200 B.C., when it was conquered by a people called the 'Sea folks', the Thraco-Phrygians, and the Hittites were driven before them from their home of 700 years. The destruction of the Hittite empire was followed by the flight of the Hittites and the consequent dispersal of their processes of iron workings to the surrounding and adjoining countries, namely, Iran, Trans-Caucasia, Syria, Palestine, Cyprus, Mesopotamia, Caucasia and Crete. It must not be imagined that the other countries had no knowledge of iron prior to this revolutionary movement. A process with which the contemporary world was differentially acquainted already got accelerated, and the pace was set for the spread of iron metallurgy over widely separated parts of the world.

The possibility of the Hittites having monopolized the manufacture and distribution of iron objects for a while, if not making the discovery, cannot be ruled out in view of the occurrences of important iron mines in Asia Minor, and amid the Taurus mountains and the Armenian and Caspian ranges, besides the adjoining regions of Persia. Some of the areas which came to be included later into the Hittite empire had been previously under the occupation of the Mitannis, to the north of Syria, whose claim to an early mastery of the technique of manufacturing objects of
iron has already been mentioned.

(v) Palestine.- The occurrence of an iron ring and two iron axe blades found at Gezer in Palestine, dated to circa 1500-1400 B.C., and a tool with an iron handle from Tell-el-Muetsellim III (Megiddo) practically constitute the earliest evidence of the use of iron in Palestine in the middle of the second millennium B.C. G.E. Wright concluded that iron was introduced into Palestine in the late twelfth and eleventh centuries B.C., on the basis of datable iron objects found at Tell-el-Farah, Beth-Shemesh, Gezer, Tell-el-Hesi, and Tell-el-Ful, though it is likely that iron had come into Palestine towards the middle of the first millennium B.C. Johannesen points out that the deadliest enemy of the Jews were the Philistines, who had settled in south Palestine about the twelfth century B.C. A pre-Philistine cemetery dated 1165 B.C. shows only bronze objects. But the graves of Philistines have yielded iron.

The evidence at Gezer in south Palestine shows iron to have been a common metal there during the XIX Egyptian dynasty i.e., circa 1300-1200 B.C.

The evidence of some iron objects from Lachish (Tell-el-Daweir) point to a similar date, though slightly earlier, say, 1100 B.C.

These and many others on the use of iron in Palestine point to its comparatively later emergence in the region than in Asia Minor or Syria.
(vi) Crete.— Iron was known in Crete towards the end of the second millennium B.C. Slags derived from oxidized ores from the great Tholos of Hagia have been referred to by Przeworski. Iron was at this time both costly and was imbued with magical powers.

Ornaments of iron dated to circa 1500-1200 B.C. have been found at Phaistos, Vaphio, Kakovatos, Aisine, and Mykenae. These include objects like finger rings of iron. As no useful deposits of iron ore are known in Crete, the iron industry in Crete was likely to have depended upon imports of ingots, turned to advantage by smelting and forging. The find of slags would lend support to such an inference. As a matter of fact an ingot of iron was found by J. Forsdyke in a tomb at Knossos, dated to circa 1600 B.C.

(vii) Cyprus.— Schaeffer holds the period 1250-1050 B.C., as the one marking the end of the Bronze Age and the beginning of the Iron Age in Cyprus. The evidence is contained in the objects of iron occurring in tombs, such as Enkomi.

(viii) Egypt.— Peculiarly enough, some of the evidence of the early use of iron in Egypt has to be discounted in view of their meteoric origin. Man-made iron did not seem to be made in Egypt until quite late in her history, as she, apparently, found it convenient to import it rather than manufacture it herself. Nevertheless, man-made iron was known to Egypt well enough during the New Kingdom, i.e., after 1400 B.C., as the evidence of the tablets at Tell-el-Amarnah, referred to before, would show.
The oldest evidence of iron occurs, however, in the cemetery of El Mahsafefw. Recently the evidence of iron objects at Buhfan in Nubia has taken the antiquity back to before 1000 B.C. The Pharaohs indeed got their earliest iron from this region. In fact, an inscription of the nineteenth century B.C. speaks about a mission to import raw iron ore and gold from Nubia.

In El-Gerzel, a tomb of the pre-dynastic period, has yielded the evidence of an iron necklace. The Pyramid of Cheops of the IVth dynasty has yielded evidence of iron, dated to circa 2900 B.C. A grave near Abydos of the VIth dynasty (circa 2500 B.C.) has revealed specimens of nickel-free rusts of iron. An amulet of meteoric iron is reported from the XIth dynasty (2160-1788 B.C.). The tomb of Tutankhamen, dated to 1360 B.C., has shown several objects of iron comprising (i) 16 miniature chisels, (ii) a head-rest, and (iii) a dagger with golden grip, and (iv) two amulets.

It is extremely interesting to note that the colour of the tools and weapons in the painted hieroglyphics are depicted up to 1200 B.C., either in yellow (gold) or red (copper or bronze) but thereafter the colour was suggestively changed to blue, the colour of iron or steel. This evidence, in the background of the Tell-el-Amarnah letters, would lead to the conclusion that iron used in Egypt prior to circa 1200 B.C. was largely imported, and thereafter locally manufactured.
Greece.- The evidence of the use of iron in Greece is provided largely by the finds in the royal tombs at Dendra, dated to the 14th-13th centuries B.C. Iron came to be used commonly in ancient Greece with the pre-geometric period, following upon Mycaenean time, i.e., after 1200 B.C.

(x) Iran and the Caucasus region

(a) Views of R. Ghirshman vis-a-vis those of C. Schaeffer in their Bearing on the Chronology and Source of Iron in Iran.- The evidence on the use of iron in Iran including the Caucasus region is indeed very crucial in a study on the emergence of iron in India as it bordered on the Indo-Pakistan subcontinent on the one hand and lay immediately to the east of Asia Minor and upper Mesopotamia, the cradle of iron industry in the second millennium B.C.

Though there is no doubt about the stratigraphic horizons in the early history or archaeology of the Iran, where iron occurs, there is considerable difference of opinion as to the chronological estimates of the levels themselves. R. Ghirshman points to the phenomenon of the destruction of the city of Hisar as having taken place either towards the middle of the second millennium B.C. or towards the end of the second or the beginning of the first.

To quote his own words, "If it is dated to the middle of the second millennium the cause of this destruction could be attributed to the movement of Indo-European described above. If it is brought down to
the last centuries of the same millennium, it may be that the cause was a new wave of Indo-Europeans, this time bringing the Iranians on to the Plateau.

He thus concedes the possibility of two main Indo-European waves penetrating into Iran, the first one coming about the middle of the second millennium B.C., about the same time as the bifurcation of the branch that went ahead and settled in India, and the second apparently, unconnected with the first, about 1000 B.C.

Before the advent of the first wave, the ceramics of Iran were influenced by the Hurrian ware of Mitanni, but, as a result of the intensified rivalry between Babylon and Assyria about the thirteenth and twelfth centuries, this influence ceased to flow. A new wave dominated by the grey-black or black ware pottery began to make its weight felt. It was possibly the result of peripheral tribes pushing into Iran from the north and north-east as a result of an external pressure. It displayed itself in Sialk V, Cemetery A. But soon it was replaced by a new culture, that of Cemetery B. The "culture belonged to the first Iranian tribes who about 1000 B.C., reached the western districts of Iran". According to Ghirshman, the Cemetery A is dated to the twelfth century B.C.

Objects of iron occur in both the cultures, though they are more prolific in B than A. The objects of iron found in Cemetery B at Sialk comprised utensils, anklets, swords, daggers, shields, javelins, arrow-heads and equipments of the harness, viz., broken bits, head and
breast ornaments for the horse.

Notwithstanding the diversity of form of the objects of iron in Iran during the time of Cemetery B culture, it is claimed by Ghirshman that it was not yet the common metal but later became widespread between the ninth and seventh centuries B.C.

There is yet another large source of iron in Iran in early times. This is indicated by the finds of iron objects in association with specialized objects of bronze found at Luristan. Though the association cannot be scientifically proved, the circumstantial evidence would suggest contemporaneity.

The iron objects from Luristan include long iron swords with iron hilts decorated with heads of men or animals, daggers with the hilts representing a human being or the stylized head of an animal, picks, and axes, often decorated with animals or parts of animal, arrow-heads, laurel-shaped, conical or trilobal.

Though there are some elements of survivals from earlier cultural milieus of the second millennium B.C., the bulk of these materials have been dated by Ghirshman "to the eighth or seventh centuries or even later". At the same time, it is noted that Luristan's cultural connections with Sialk VI, Cemetery B, are quite numerous, suggesting contemporaneity. Ghirshman's argument for a late date of the Sialk Cemetery B culture is presented by the evidence of "an imposing structure with door-hinges in the pure Assyrian style of the eighth
To support his argument about iron not becoming common or widespread until the ninth to seventh centuries B.C., he has pointed to the preponderance of copper or bronze in preference to iron in the B tombs of Sialk. The booties carried by the Assyrian armies contained far less iron than copper, and even as late as the eighth century B.C. the troops of Sargon II were still armed with bronze picks and axes. He also mentioned "that the excavators of the wealthy towns of the kingdom of Urartu found that iron objects were much less common than bronze".

C. Schaeffer has considered the entire evidence of iron in the Near East (i.e. West Asia), including Iran, comprehensively in his remarkable study on the comparative stratigraphy and chronology of western Asia. He has come to the conclusion that the Iron Age in Iran began towards the end of the Bronze Age, between circa 1200 and 1000 B.C. He traces its evolution in and dispersal from Asia Minor where the metallurgists, according to him, were the first producers of iron in large quantities, and, towards the end of the 13th century, it came definitely to supplant
brass for the manufacture of arms and tools in ancient Orient. One of the prime factors for this phenomenal development all over the Near East is the invasion of the Sea folks into Hittite Asia Minor and the corresponding pressure on folk movements that engulfed the entire Near Eastern world. It was Rameses III, who stemmed the tide of the movement of the newcomrs into Egypt. The event of folk movements is connected also with the discomfiture of the Kassites of Assyria about 1171 B.C., after a rule of nearly six centuries.

The chronological scheme, beginning with 1200 B.C. for the commencement of the Iron Age in Iran, affects all parts of the country, whether in the north in Koban or in the south, west or east. The round figure of 1200 is according to Schaeffer to aid the memory. He would rather consider that the period from 1250 to 1175 marked actually the events that led to the ushering in of the Iron Age in the Near Eastern countries.

The evidence of Agha Bulur in the Talish basin is considered below. Most of the dolmens exposed here by De Morgan belonged originally to the Bronze Age, but were re-used later in the Iron Age. The objects of iron at Agha Bulur comprised twelve knives or fragments of knives, arrow-heads, axes, brooches, ear-drops, rings, hatchets and daggers, lances and a sword with a bronze pommel.

At Chagulla Derré as well, the dolmens were used in the Iron Age, and the objects found there comprised knives, a dagger, bracelets and three javelins of iron. Nevertheless, the evidence shows that the proportion of iron here was less in comparison with the objects
One of the fundamental objects which can be called typically Iranian, is a dagger with a bronze handle. The bronze handle has the shape of a folded fan, and grips the dagger blade as a tongue closing in on it at the top in the form of a crescent. This shape is found at Hekavend as well at Luristan and also in Transcaucasia. The grip was fixed without any rivets, but, though this feature was no more functional in the Iron Age, it gradually declined and remained only as a relic from the Bronze Age.

The evidence from Tepe Given and Tepe Diamshidi, in mid-western Iran, in comparable levels shows the occurrence of iron in the form of arrow-heads of laurel-leaf shape, awls and daggers.

Though phase V of the occupation of Sialk, represented by the Cemetery A, contains traces of the occurrence of iron in the form of a small dagger with a narrow tongue, and an awl of square cross-section, it does not really belong to the Iron Age properly, which is represented by Sialk VI, as seen in the Cemetery B. Though the proportion of iron increases in this phase at Sialk, Ghirshman is of the view that iron was relatively precious at this time.

The evidence of iron from Koban is also dated similarly to circa 1200-1000 B.C. by Schaeffer.

The basic evidence for the suggested chronological scheme arrived at by Schaeffer is furnished by the
seals and sealings found in the levels below the occurrences of iron in Iran. These are made variously of vitreous paste, soft stone, and, rarely, terracotta, and they are distinguished by the symmetrical arrangement of the scheme of figures, consisting of crouching animals recalling the glyptic art of the 15th-14th centuries in Kirkuk.

Some seals found at Agha Elyar in Talish are similar to those found at Beisan, contemporaneously with Thotmes III of Egypt (circa 1500-1460 B.C.). Similar seals are found in Cyprus, Greece, North Syria and at Kirkuk, near Nuzi in Syria. Tell Brak has produced a specimen which has been dated by Mallowan to circa 1450 B.C.

A seal from Tepe Gyan bears resemblance to those from Talish and are typologically datable to the 15th and 14th centuries B.C.

The seals at Sialk VI, Cemetery B reproduce the subjects of chase, or a chariot, offerings etc., reflecting Mesopotamian or Syrian influence. One of scarabees at Sialk VII B bears an epigram of Seti I of Egypt who ruled between 1319 B.C. and 1300 B.C. Even the time-lag of a hundred years would point to a date around 1200 B.C. for its emergence in the region.

It is also to be noted that the similarity of seal types between the Talish Bronze Age in its end-phase, and Sialk VI, B would only point to a closer
chronological connection between the two. The fact of the absence of cylinder seals in the Iron Age in the Talish region would, however, indicate that it is later in date than Sialk VI, B. Ghirshman's lower dating of Sialk VI is based on similarities in the decor of some vases in Sialk V with the Talish basin, but since the latter is dated on the basis of seals to the 14th and 13th centuries, a higher date for Sialk VI would be called for.

Inspite of Ghirshman's insistence to the contrary Schaeffer sees no connection between Sialk VI, B and the recent Bronze Age in the Talish basin in none of the following objects: daggers, swords, axes, or the ceramic, though some similarity in such simple forms as lances, knives, arrow-heads is noticed.

The horseman seals of Sialk VI have been derived by Ghirshman from Assyria of comparable levels, dated from the 10th to the 8th centuries B.C. But the other evidence of the seal with the epigram of Seti I would argue against such a conclusion. Besides, it may be pointed out that the horseman seals were a natural product of the soil, as raising of horses was a favourite engagement among the Persians.

Ghirshman also uses the evidence of the absence at Sialk VI, B of the type of dagger with handle - with hammered or rivetted wings as found at Ras Shamra early in the 14th century B.C. and in Luristan in the 12th century B.C. Though the negative
evidence cannot be stated as conclusive, the occurrence of varying forms of dagger point to an inspirational connection and corresponding chronological equation.

It is clear that the final phase of Hissar III C is anterior to Sialk VI,B as the former belonged still to the Bronze Age, completely unaffected by iron, but Schaeffer dates it to circa 2100 - 2000, while Ghirshman dates it anywhere between the middle to the end of the second millennium B.C. The uncertain aspect of Ghirshman's chronology and the definiteness of the phase belonging to the Bronze Age, make the dating of Ghirshman difficult to accept.

Circumstantially, however, the date-scheme suggested by Schaeffer for the beginnings of the Iron Age in Iran appears to be nearer the truth, on the following grounds. The foregoing analysis of the evidence on the early use of iron in the Near East, and its development in Asia Minor in the fourteenth and thirteenth centuries, as in a cradle-land, leaves no room for doubt about the date of the beginnings of iron workings in the ancient Orient. The invasion of the Sea folks, the Thraco-Phrygians, about 1200 B.C., into Asia Minor resulted in the rapid dispersal of the iron using and manufacturing folk all over the Near East and was responsible for the rapid development of iron industries in the succeeding centuries. It also
set in motion a tremendous movement of folks in different directions and should reasonably be expected to have been responsible for the entry into Iran of the Sialk VI Cemetery B folk.

(b) **Introduction of Iron in Iran owed itself to Aryans**. - The cranial studies by H.V. Vallois of the skeletal remains from the cemetery have shown the people to belong to the Armenoid group, described by Ghirshman as brachycephalic. Ghirshman calls these people the ancestors of the Iranians, thus recognizing in the people a group of Indo-Europeans or Aryans.

It is very likely that the folk movements and the spread of iron industries was the result of the upheaval in Asia Minor. The question of identifying the new folks as Aryans is, however, fraught with difficulty, though circumstantially such an identification may be conceded. Ghirshman, however, considers the destruction of the Hissar occupation as the result of an earlier movement of the Aryans, though the possibility of a later destruction has not been ruled out. As the last occupational phase, Hissar III C, was an out and out Bronze Age occupation and as at the date assigned to this phase, between 1500 and 1000 B.C., by Ghirshman, iron was known well enough among the contemporary Aryan tribes further west, namely, among the Hittites and Mitanni, it is unlikely that the destroyers of Hissar did, in fact, represent an Aryan people. On the contrary, the subsequent Iranian language and religion, both akin to the Vedic, would plead for the equation of the people of Sialk VI with
from behind caused by the folk movement is also not far to seek.

Ghirshman's argument for a late date for the destruction of the Sialk VI phase in the Iranian towns does not rule out earlier beginnings. This is indicated by the occurrence of cultural objects from earlier periods into the later phase along with newer elements.

Ghirshman has himself pointed to the two most significant events in the Near East, especially in Iran, towards the end of the second millennium B.C., namely, the moving in of the Indo-Europeans and the increased and widespread use of iron, though that would hardly be a ground, according to him, for a cultural connection between the two. But circumstantial evidence, in the background of the foregoing discussion, would suggest a close connection between the two and also plead for a near-accuracy of Schaeffer's date-scheme in preference to that of Ghirshman.

C. Aryan Problem and the Iron Age

(i) Aryan Problem in General. — The close connection between the movement of Indo-Aryans and the widespread use of iron in the Near East towards the end of the second millenium B.C. deserves to be examined in view of the evidence in India on the problem of her Iron Age. Such a study would mean the consideration in some detail of the original home of the Aryans and their movements, on the one hand, and their contacts or connections with the iron-using people, on the other, on their march,
in their bearing ultimately on the relationship between the Aryan movements and the Iron Age in India. The factor of chronology plays, of course, an important role in this study.

The problem of the original home of the Aryan speaking people and the course of their gradual movement to different parts of Europe and Asia, especially their final settlement in Iran and India, has baffled solution, and there is hardly any other topic on which more divergent views have been expressed. It is not endeavoured here to offer a solution of the problem, but to state the divergent viewpoints with a view to considering how far they are tenable or otherwise, and also to arrive at the probable course and date of the Aryan immigration into India; and to see if in the course of their movement they could reasonably have acquired acquaintance with iron, in its different aspects of either mere use, or the technological processes of its manufacture as well. Archaeologically it would be ideal if epigraphical evidence along with the cultural equipments of Aryan speaking peoples could be discovered over a wide area. The stratigraphy and other internal and external evidences along with epigraphy would then help to fix not merely the chronological position but also the interrelated cultural assemblages on a geographical basis. Comparisons of the cultural milieus against their chronological backgrounds would help to produce a connected account and it would be
helpful to trace the Aryan speaking people and their geographical distribution in their evolution. But in actual practice, apart from limited epigraphical evidence, such as the Boghaz Keui records, there is hardly any cultural assembly that could with definiteness be associated with any Aryan-speaking people as such.

Broadly, there are four groups of Aryan speaking people, namely, the Hittites, Mitanni, Iranians, and Indian Aryans, apart from several others, who have been recognized, and are concerned with the problem in hand. It is possible to work out a picture of their cultural lives either from the archaeological evidence or from the literary, and the interconnections between one and another are now fairly recognizable. There are other Aryan-speaking peoples, and it is even possible to work out their individual cultural lives, but to effect connections between one and the other in stratigraphy as in typology, is as yet difficult. In the study of cultures it is to be noted that the cultural nuclei are prone to receiving fresh impulses and influences from the different people with which they come into contact. There may not, therefore, be any trace of an unmixed and uniform Aryan culture anywhere.

Yet another means of tracing the missing links of the Aryan speaking people is through the study of sister languages evolved from the parental
language through their ancient palaeontological remains, from the point of view of its evolution and development. These may be achieved by studying the modern languages as well, but the study cannot be fully satisfying because the diverse languages in differential stages of development may be removed differentially from the ancient habitat, and the most primitive form of the language need not represent the oldest people and their present geographical location, need not, therefore, be near the ancestral habitat of the parent language. Studies of the problem have given rise to different theories of their origins and expansion.

(ii) Hittites and the outlines of their history. The oldest known Aryan speaking people are the Hittites, who moved from an as yet undetermined source, into Asia Minor before 1950 B.C. and settled in a new land called Hatti. The cuneiform archives of the capital city, Hattusa, now called Hesperus, called (Boghaz Kale in modern Turk), have yielded a mass of evidence on the people of the land. Among the languages spoken by the people eight have been identified and three of them, namely, Luwite, Palaite and Hittite are Indo-European as first propounded by B. Hrozny as far back as 1915. The Indo-European languages spoken by these newcomers belonged to the Centum group. The Hittites cannot, therefore, be connected with the Satem speaking Indo-Aryans of Iran.
and India. Whence these people came has been the subject of a controversy that has been raging till this day, being part of the larger question of the original home of the Aryans.

It is now held that the Indo-European linguistic tradition came into existence into Asia Minor as far back as the end of the third millennium B.C. One of the first known kings of the newly arrived folks was Anittas, of about the middle of the twentieth century B.C. It was a time of independent city states.

Though the archaeological excavations and the cuneiform inscriptions have thrown ample light on the historical aspects of the Hittites, a complete and connected account from year to year, filling out all the details cannot yet be worked out. Not much, in fact, is known of the period from 1620 to 1440 B.C. From 1440 onwards the information brightens up, and the Hittite empire is seen thereafter to be in conflict with their neighbours in the Mitanni kingdom.

Nevertheless, two imperial periods of glory have been discerned and established. The first or Old Imperial phase lasted between 1740 and 1460, and the succeeding one, called the New Empire, lasted from 1460 to 1190 B.C. As has been stated before, the second Hittite empire was terminated by the onslaught of the Thraco-Phrygians about 1190 B.C. The Hittites themselves were forced to flee. They took refuge in
Syria where they set up a new settlement that lasted till /709 B.C., when their last refuge or territory were conquered and seized by the Assyrians.

The Hittites are so called by the Assyrians in their epigraphical references to the folks, after the name of the land, Hatti, which they had made their own home. The script of the inscriptions of the Hittites was the Babylonian cuneiform, but the main language was the Indo-European Hittite. But the later Hittites of Syria adopted a hieroglyphic script and also a different Indo-European language.

(iii) The Mitanni and the Outlines of their History. - To the east of the Hittite territories, comprising the eastern parts of Anatolia, and the northern parts of Mesopotamia and parts of modern Syria were the land of Hurrians as mentioned in the Hittite inscriptions. They came into the region shortly before 2000 B.C. The territory can, in fact, be divided into three parts, namely, the Hurri proper in the north, the Mitanni region in the northern parts of Mesopotamia, with its centre in the Harbour area, and an area called Azzi-Hajascha in the north of the upper Euphrates. But the ruling house of this vast land was the Mitannis, between the end of the sixteenth and fourteenth centuries B.C., who, from the names of their rulers, have been adjudged to be of Indo-European extraction. The ruling class,
however, was a minority and there is an interlude of several centuries between the emergence of the Hittites in Asia Minor and the appearance of the Mitanni on the scene.

The history of the Mitanni kingdom is also derived, to an extent, from the documents in Boghaz Keui, the Assyrian and Egyptian records, royal inscriptions, and the Tell-el-Amarnah letters. Parshtar was the founder of the Mitanni ruling dynasty with the capital at Wasuganni, which has not yet been identified.

The Egyptian records of Thothmes, about 1483 B.C. makes a reference to the aristocracy of Mariyannu, the chariot warrior bands among the Mitanni, ruling in the land called Naharina. The Mitannians had, in fact, stopped the Egyptian advance at Megiddo. During the rule of Amenophis II (1447–1420 B.C.), Egypt counted Mitanni among her allies. An inscription on the colonade north of Karnak says that the nobles of the Mitanni carried tributes on their heads begging for their lives. At this time the Egyptians captured five hundred and fifty Maryannu.

Thothmes IV (1420–1411), married the daughter of the Mitanni king, Artatama I. This lady was the mother of Amenophis III (1411–1375). This latter king of Egypt married Gilu-Hepa, the daughter of Sutarna (son of Artatama I), in the 10th year of his reign.
Dushratta, the son of Sutarna, maintained good relations with Egypt, and his daughter, Tadu-hepa, was later married to Amenophis III. On his death, his son and successor, Amenophis IV (Akhnaton) married the widow of his father, the lady who is celebrated in history as Nefertiti.

Dushratta was assassinated by his son Mattiwaja. Meanwhile another son, Aratatma II sought the aid of the Hittites, then ruled by Suppiluliuma, to make an attack on the ruling prince. Mattiwaja was defeated, but he entered into a treaty with Suppiluliuma, by the terms of which he was to marry the daughter of Suppiluliuma, and exclude the accession to the throne of Mitanni of all but the descendants of the daughter of the Hittite. The Hurrian domains in the north were given to Biassil, son of Suppiluliuma. He thus entered into a state of vassalage under the Hittites.

This treaty is one of the most important documents of history and was drawn up in two copies or versions. It has been dated to circa 1365 B.C., on the ground that Mattiwaja, the Mitannian party to the treaty, succeeded Dushratta. The latter had conducted correspondence with Amenophis III (1414-1379 B.C.) and Amenophis IV (1379-1365 B.C.) as recorded in the Tell-el-Amarna letters. The Hittite version was to be kept in the temple of Arnina and the
and the Mitanni copy in the temple of Tesup. As witnesses for the signing of the treaty and as a safeguard for its maintenance a hundred gods and goddesses were invoked. Among these occur the names of Mitra, Varuna, Indra and Nasatya, clearly Vedic gods, occurring in the same sequence in the Rigvedic text. The Hittite text was discovered by Hugo Winckler at Boghazköy in 1906. This helped, more than any other factor, to establish the Indo-European character of the people concerned. This inference was strengthened by the discovery of a Hittite text, on clay tablets, on the training of horses, attributed to a Kikkuli of the Mitanni country, found at Boghazköy. Though the language of the text is Hittite, the technical (numeral) terms connected with the turns and twists involved in the training of horses were in the Indo-European (Aryan) language. These comprised (the numerals) aika - vartana, tara - vartana, pañza - vartana, satta - vartana, and nava vartana.

Besides these clearly Indo-European elements were the numerous personal names and geographical names resembling or derived from the Indo-European forms, which point to the existence of a substantial, though numerically small, Indo-European element in the Mitanni population, confined especially to the ruling class.

Thus a firm date for the existence of an Indo-European people, about the middle of the fourteenth
century B.C. has been established. No doubt, they moved into this area at least about a hundred and fifty years earlier from elsewhere. From the point of view of language, considering its similarity to the Rigvedic language, including the word *nasatya* in plural, corresponding in form to the dual (dyanda-samas) form of *nasatyam* in the Rigveda, the people still belonged to a phase when the Indian Aryans and the Iranians were unseparated.

It has been held that a band of *condittori* had separated itself from the parent group and moved into the land of the Hurrians, and founded the Mitanni empire, when the parent stock were still on the march. Considering the fact that they were a small minority of adventurers, it would indeed be difficult to conceive that an even smaller group of these very people moved away subsequently from the Hurrian lands any time between the end of the fourteenth, as, *prima facie*, the Aryan civilization of Iran and of India could hardly be the achievement of a handful of people, who could win battles and yet retain their language and religion. Apart from the palpable improbability of such a phenomenon, the fact that the Mitannis themselves adopted the local language, Hurrian, which is neither Semitic nor Indo-European, would argue against any such inference. It is also to be noted that the vast intermediate land mass until Iran is reached is singularly devoid of any substantial trace
It is indeed true that the Kassites, a people of Indo-European stock, who ruled in upper Mesopotamia for nearly six hundred years up to 1171 B.C., could lay claim to their Indo-European extraction only on the basis of the names of Sharqash (Surya = sun), Marutash (Marut = wind) and Buriash (Boreas, the Greek god). They adopted the language as well as the material culture of the local inhabitants.

During the heyday of Mitanni rule, there was besides no provocation for an exodus of militarist or adventurous nature.

It would, therefore, be wrong to trace the Aryans in India to a later immigration from among the Mitannis of Syria.

Since, however, the parallelism of language and religion, howsoever limited, is a fact, it would perhaps be more correct to state that they (the Mitannis) had separated themselves from the parent stock at a time before the bulk of the population moved away towards India. This should have happened before the beginning of the Mitanni dynasty in Syria. At the same time it is to be recognized that the way of life, involving the working out of a pantheon, at least to the extent to which the four deities mentioned in the Boghaz Keui text were concerned, had been completed, and their association was firmly rooted in tradition to be transmitted in an identical order or sequence of
precedence, centuries later, to the Rigvedic text. There is nothing peculiar about the chronological distance of the 'echo' as, even in the subsequent centuries, reliance was placed with success on the powers of trained and ordered memory to retain and transmit the religious lore, rituals, hymns and philosophical verses from generation to generation.

That the language of the Mitannis, in the limited relics preserved, represented a phase in the life of the Indo-Europeans, before they became differentiated into Iranians and Indo-Aryans, is indicated by (i) the numerals, (ii) the names of the Vedic deities, who find place except perhaps Varuna, even in the modification in the later reformed religion of Iran, and (iii) the unchanged form of the 'S' sound in all the names. Under the circumstances some land outside of both the Hittite and Mitanni domains have to be thought of for their spring-board before the bifurcation. Both Asia Minor and Mesopotamia (Iraq) are, therefore, ruled out from the consideration in hand. The early emergence of the Hittites in Asia Minor would indicate that the separatist movement from the parent stock had started well before the end of the third millennium B.C.

The close connection between the Mitannis and Hittites with the manufacture of objects of iron,
the extent of both enjoying a monopoly in the trade in succession, has been discussed above. Their role in disseminating the knowledge and technique, especially that of the Hittites, over the whole of western Asia reaching up to the borders of the Indo-Pakistan subcontinent has also been indicated. This leads directly to the evidence of the Aryan movement into Iran.

(iv) Aryan problem and Iran.- The views of R. Ghirshman on the immigration of an Indo-European people into Iran have been mentioned before. He recognized, in fact, two movements, the earlier being identified with the destroyers of Hissar III culture and represented possibly by the culture of Sialk V, Cemetery A. The second wave recognized by him in the culture of Sialk VI, Cemetery B, should have proved the more lasting and introduced the true Aryan or Iranian culture into Iran. The date assigned by him to this cultural wave is 1000-800 B.C., though Schaeffer has pleaded for a more anterior chronological range. Behind any folk immigration must be a provocation. The arrival of the Thracophrygians in Asia Minor heralded widespread movements of people all over the ancient Near East, and, as has been shown above, such a pressure must have resulted in the arrival of the Aryans into Iran after 1200 B.C. The earliest movement, if at all of Aryan inspiration, had no lasting effect in Iran and need not concern the problem in hand. There is no suggestion of a provocation either at the earlier date. The
second movement buttressed up by parallelism in both language and religion with the Vedic is of primary importance in this study, and it had at least the provocation of a pressure from behind of a powerful group of fighting folks. The provocation which is firmly dated, also defines the chronological standpoint.

The Indo-European Kassites who had infiltrated into northern Iraq, in the post-Hammurabi period, have already been referred to. That they never became culturally strong or impressive is quite clear. They were hurled down from their ruling position about 1171 B.C., when the Assyrian power came fully into its own.

It was, however, in Iran that the Indo-European people made themselves felt effectively. Ghirshman holds the view that the original common home of the Indo-Europeans was probably in the Eurasian plains of southern Russia. They split themselves into two groups or branches, called the western and eastern branches, respectively. The western branch rounded the Black Sea, the Balkans and entered into Asia Minor across the Bosporous and signalised themselves in history as Hittites.

The eastern branch moved on eastwards, but one group, consisting mainly of the warrior element, crossed the Caucasus and pushed on as far south as the Euphrates and founded the kingdom of the Mitanni.
Yet another group of these warrior horsemen moved along the folds of the Zagros and penetrated into the region to the south of the great caravan route into upper Mesopotamia, and came to be assimilated by the Kassite people.

But the main eastern branch kept on moving and slowly crossed Transoxiana, the Oxus and, after a short stay in Bactria, crossed the passes of the Hindukush, descended along the Pandishir and Kabul rivers and entered into Iran.

The Iranians, however, who came later from the region of Transoxiana, were unable to spread further eastwards towards the Hindukush as this region had been already under the occupation of the Indo-Aryans, who had settled there at the time of the earlier Indo-Iranian invasion. They turned, therefore, from Bactria westwards towards the heart of the plateau of Iran. The Iranian movement is thus attempted to be shown by Ghirshman to be secluded and separated from the Indo-Aryan movement, which should also explain his chronological scheme.

Under this interpretation the connection between the Iranians and Indo-Aryans is not apparent, though such a connection should have existed before the alleged breaking away of the Indo-Aryans from the region of Transoxiana. Such apparent contacts between the two people as are—however—indicated by
linguistic parallelisms and religious schism between Iranian and Indo-Aryan should, therefore, be attributed to this period of unbroken common existence.

Ghirshman hesitantly attributes the destruction of Hissar III to the earlier Indo-European movement and also the introduction of Sialk V, Cemetery A culture to this movement. But the cultural disparity between Hissar III C and Cemetery A on the one hand and Cemetery B on the other, and the discovery of a hitherto unknown new ethnic type in Cemetery B on the soil would preclude any connection between the earlier movement and the later, and would make it difficult to explain so easily the dispersal of the main ethnic group, if it was indeed the earlier of the two. It stands, therefore, to reason to deduce that the entire movement was integrated, up to a point, and that the Indo-Aryan element separated itself from the Iranian in Iran, or before the Iranians marched into Iran, shortly after 1200 B.C.

A plausible course of events in Iran towards the end of the second millennium B.C. is indicated by the appearance at Gyan I and Sialk V, Cemetery A of a grey-black or black pottery, not previously known there. This is construed as the result of the pressure of an invading folk from further north, as the grey-black pottery was already known in Hissar in the third millennium B.C. The invader is ultimately recognized in Sialk VI, Cemetery B, the cultural assemblage in which points to a departure from the life of the earlier days. The culture of Cemetery B...
at Sialk VI, is also identical with that of the Luristan type of graves at Giyan I.

The excavations at Khurvin, near Tehran, have shown, however, that the two cultural phases represented by Sialk V, A, and Sialk VI, B, respectively, are introduced with a stage of overlap between the two.

To trace the contacts and mutual influences between the Iranians and Indo-Aryans, if any, on Iranian soil, on the one hand and the Hittite or Mitanni on the other, it would be the best to consider the material remains of the Iranians of comparable or connected time-scale. These comprise, representatively, the objects found at Hissar III C, Sialk V, A, Sialk VI, B, and Luristan.

It may, however, be observed that Ghirshman is not sure about the date of the end of Hissar III C. The excavator had dated it to the first half of the second millennium B.C., towards the end of the Copper or Bronze Age, with a possibility for a still earlier date. Schaeffer would date it, however, to circa 2100-2000 B.C. It is significant that Hissar III has yielded no objects of iron, though the Cemetery A of Sialk VI has produced several. Under the circumstances, the attribution of the destruction of Hissar III to an Indo-European movement seems to be of doubtful value.

The cultural complex of Sialk V, Cemetery A, is characterized by a simple interment of the contracted body in a pit to the accompaniment of grave goods.
comprising a diversity, alike of ceramic wares and types and bronze equipments, among which two objects of iron have also occurred.

The main ceramic wares of Sialk V, are (i) a grey-black-ware, (ii) plain red ware, (iii) a painted ware of yellow to greenish colour, and, (iv) a red ware. The types of vessels provide a large variety. The grey black ware is similar to the ware found in Hissar III C, Shah-tepe and Turam Tepe and, in fact, to a ware occurring in corresponding periods in central and northeast Iran and Transcaucasian areas.

The painted ware, which is rough, porous, hand-made and not burnished, has parallels in Alishar III, Kuel-tepe and Boghaz Keui in Asia Minor towards the end of the New Empire period. Though the other equipments are mostly of bronze, two pieces of iron, namely, a dagger and a small point, respectively, suggest the acquaintance of Iran with iron in this phase. The lances of bronze have parallels in Boghaz Keui to indicate perhaps the source of inspiration.

Sialk VI, represented by the Cemetery B, is separated stratigraphically and culturally from the earlier phase, of Cemetery A. The duration of the hiatus, if at all, between the two, is indeterminable, though it cannot be very long as indicated by the overlap at Khurvin.

Sialk VI, B, is distinguished primarily by an elaborate funerary ritual. The bodies were lowered into a pit measuring from 1.75 to 2 metres in length,
varying in width from '7\ to '8\ metres. The sides of the pit were not lined with slabs. But the tumulus was surrounded by an enclosure or girdle of slabs, namely, of stone, and occasionally of terracotta, and in combination with sun-dried bricks. One of the slabs carried a circular or squarish perforation, obviously the port-hole, as of the megalithic slab-cists. The pits were oriented north-south or east-west. The bodies, mostly as singles, were laid in an embryonic position, laid on the right or left side, with hands folded on the chest or abdomen. In a few cases multiple or family burials in succession have been known. The funerary furniture was laid in different positions around the body and comprised a large equipment of vessels of terracotta as well as of metal, weapons and toads of bronze and iron, ornaments of gold, silver and bronze, objects of toilets and beads.

The pottery of Sialk is strikingly different from the ancient ceramics of India, save for the limited evidence of channel-spouted bowls found occasionally in the chalcolithic cultures of west-central India, which was probably the result of some contacts. The ceramic assemblage consists of (i) the black or grey-black, (ii) red and (iii) dull red or drab wares. These, excluding broadly the grey-black ware, are often painted. The
painted designs are confined mostly to bowls and jug-like jars. The most distinctive ceramic type, which spread far and wide in Iran, was the bowl or vase with a large loop-handle and a long channel-spout, richly painted. It was used for libations at burials. The other shapes comprise (i) jars, ring or disc-footed or flat based, some with a wide mouth, a loop-handle and a pressed fan-shaped spout on the shoulder, (ii) bowls and (iii) composite jars, forming groups of three joined deliberately in firing together. A flattish flask, with a narrow neck and small loops on the side in grey-black ware, was a utilitarian pot, with parallels in the cairn-burial pottery of Pakistan as has been mentioned before. The painted designs, executed in black, are either (i) geometric or (ii) interesting treatment, often in combination, of men at fight, ibexes, horses or the popular solar disc symbol. The geometric patterns, arranged in zones or panels, consist of chess-board chequers or a row of conical triangles and the like.

The cultural links, if any, between the Hittites or the Mitannis or between any of these with Sialk V or VI are not recognizable, except in the matter of the emergence of iron in Iran, especially in the phase of Cemetery B of Sialk VI.

The presence of iron in Sialk V and its larger occurrence in Sialk VI have been noted. These evidences prove the early emergence of iron in this area. According ...... ....
to Ghirshman, "The increased use of iron during the first millennium had a far reaching effect on the economic structure of society. Although known to the Hittites and rulers of Mitanni in the fifteenth century B.C., this metal did not become widespread until the ninth to seventh centuries B.C. ........."

When speaking of the use of iron at this period, however, a reservation must be made. Although this metal came into general use, this does not mean that it finally replaced copper and bronze, for these continued to be widely employed for a long time. This transitional period during the early centuries of the first millennium is well illustrated by the Cemetery at Sialk. The tombs of the ruling class of horsemen show that weapons as well as harness, and even utensils were made of iron, although there was still a number of bronze objects."

"Nevertheless, the quantity of iron used was not yet as great as that of copper. If we consult the lists of booty amassed by the Assyrian armies, it appears that the weight of iron carried off from Iranian towns never equaled that of copper, and indeed scarcely amounted to half of the latter..... The presence of iron jewellery, in the modest tombs of Sialk is hardly a criterion of the amount of iron which was available elsewhere, for we knew that Sargon II's troops (end of the eighth century B.C.) were still armed with bronze picks and axes;
that the treasury, Alyattes, king of the wealthy state of Lydia, at the beginning of the 7th century B.C., possessed iron vases as well as gold and silver vessels; and that Croesus, his successor, presented worked vases of iron to the oracle at Delphi. Many iron arrow-heads and javelins were also found in the tombs of Sialk. It should, however, be recalled that the excavators of the wealthy towns of the kingdom of Urartu found that iron objects were much less common than bronze.

Despite the bias in the chronological estimations of Ghirshman, the presence of iron in Sialk and elsewhere in Iran in a date-range comparable with the chronological assessments of the Aryan settlements in India pave the way for its larger and more extensive use almost immediately after its first emergence in the region.

From the foregoing, it would be clear to see that it would be idle to attempt to seek traces of a linear evolution from Sialk VI to the culture of the early Aryan settlers in India on the basis merely of pottery or other material equipments. Nevertheless, as the Aryans came to India from outside, inspite of some claims to the contrary, as will be established in the following pages, they could not but have been influenced by the cultural contacts with the Iranians, as the Zoroastrian religion is but a reformation of the Vedic religion, and the old Persian language has close affinities with the Vedic with clearly marked
differences that emerged later. That their cultural equipments would show differences is easily explained by the difficulties of transporting en masse such fragile objects as pottery over long distances spread over a period of time. Of the more durable equipments of metal, some must indeed have been carried, and are yet to be discovered. It must at once be considered that the Aryan settlers had no end of trouble in the earlier years of their settlement. These years were scarcely suitable for establishing new industries, such as iron, as they would hardly have had the time and leisure to seek out the raw materials of the industry, especially the iron ores.

Some similarities, suggesting contacts, mutual influences and even folk-movements, have indeed been discovered in recent years between Iran and the western parts of India, represented by the post-Harappan chalcolithic culture in west-central India and northern Greece. Nevertheless, it would not be safe to identify, on this analogy, the chalcolithic folk with the Rigvedic Aryans or Indo-Iranians. As has already been pointed out in Chapter 4, the strongest objection to this suggested equation comes from the geographical focus of the Rigveda itself, which is laid entirely in the land of five rivers, with Saraswati as the river par excellence as the central habitat of the concerned folks.

The problem at hand leads directly to the question of the movement of the Aryans and their settlement in India.
The Aryan Problem

(v) Question of the Original Home of the Aryans:

It lay in Central Asia. It was Sir William Jones, who, in his famous address to the Asiatic Society of Bengal in 1786, laid the foundation of comparative philology which is the principal means of dealing with the elusive Aryan problem. The problem precisely is to trace the original language among the medley of languages known as the Indo-European languages, its habitat, and the associated folk as an archaeological-cum-anthropological entity.

Every language to begin with belongs to a group of people living together. They may represent a race or may not. But once originated, a language is apt to behave like a transferable commodity, and may even desert its originators. The point to seek is the centre from which the speech form, along with the rudiments of the culture of which it was the vehicle, spread over Europe and Asia. It would, therefore, be fair to assume, even at the risk of its sounding hypothetical, that the original Indo-European speech began in a small community. In course of time, in the wake of its expansion in numbers, it must have broken up into tribes with an urge to move on and away in search of food and pasture, if not strictly of adventure. These movements must have brought the different groups into contact with other people on the way which could have but a threefold effect, viz., (i) racial admixture, (ii) linguistic admixture and a consequential (iii) cultural modification by fusion.
The principal means of retracing these phases of human history is through the study of the languages of the groups of people that speak till to-day, or have spoken in the past, as revealed by archaeology (epigraphical records), languages akin to the parental Indo-European, and their archaeologically discovered cultural ensemble in the background of their most ancient literature, namely, the Vedic literature, which includes the fauna, flora and climatic conditions described in them. This method is based on the premise that the Vedic literature reflects the most ancient and original culture of the Indo-European speakers. If it does not, a natural fallacy would emerge, and the Vedas would no more be a help in the study. Notwithstanding this fallacious premise, the sincerest endeavours have been made to trace archaeologically as well as through linguistic palaeontology the most ancient speakers of the Indo-European language, their original habitat, their dispersal and courses of movements in different directions and their ultimate settlement in new territories on this method.

The Indo-European languages are broadly divided into two groups, called respectively Centum and Satem based principally on the distinction of 'K' or 'S' sounds, peculiar to each group. The Centum group includes the (i) Celtic (ii) Germanic, (iii) Italic, (iv) Greek (v) Hittite, and (vi) Tocharian families and the Satem group includes (i) the Albanian, (ii) Letto-Slavonic, (iii) Armenian, and (iv) Indo-Iranian
language families, respectively.

No other humanistic problem has perhaps presented such manifold difficulties as the problem of the original home of the Indo-European speakers and the courses of their movement. The controversy on the original home has not died down till to-day, and perhaps the best commentary on the present situation is by A.B. Keith, who had said more than two decades ago, "Our ignorance is tantalizing, but it is better than the assumption of knowledge." He said further, "The true conclusion from all the evidence remains that there have not yet been any grounds which justify us in identifying the Indo-European home, and that in all likelihood the question is one which does not permit at present of an answer of scientific character".

He goes on to declare in his paper on the Home of the Indo-Europeans, "It must be added that efforts to assign the Indo-Europeans to any of the many cultures not known to have existed in Asia or Europe must be regarded as at present at least wholly premature."

Keith emphasizes, "If we lay aside our prejudices in favour of Europe or Asia, we must confess that there is really no adequate ground for localizing the Indo-Europeans in either, if we adopt as our criterion a comparison between the hypothetical Indo-European civilization and that revealed by archaeological research in either continent".
Nevertheless, out of the clashes of arguments, certain facts have emerged, and the problem is far nearer its solution to-day than ever before. It will, therefore, be endeavoured to set forth the principal viewpoints in regard to the problem in hand and draw such germane conclusions as may be possible in connection with the introduction of iron into India.

The cradle of the original home of the earliest folk who spoke the Indo-European language has been tossed about a great deal, though confined essentially to Europe and Asia. At the farthest, outside this zone, have lain the Arctic region and only a little less far was the suggested Greenland home of Aryans. The home has been located by successive authors also in the Scandinavian countries, Central Europe, Hungary, South Russia, Central Asia, Siberia and even India itself. These views will be stated one by one, and the pros and cons briefly discussed, in order to arrive at the most acceptable of the various mutually exclusive suggestions outlined above.

It was Bal Gangadhar Tilak, who pronounced on the basis of his astronomical calculations that the original home of the Aryan speakers lay in the Arctic region in the north. This view has no adherents to reckon with to-day, and cannot be proved culturally or through linguistic evidence.

Tilak believed that the Arctic home was
destroyed by glaciation about 10,000-8000 B.C., and that the ancestral Aryans settled in Central Asia about 6000-5000 B.C. These conclusions are clearly opposed to the modern evidences on chronology which will be examined later.

Strzygowski's suggestion that Greenland was the original home of the Aryans deserves no more than a passing mention.

T.J. Engelbrecht, *Die Urheimat der Indo-Germanen*, Glueckstadt, 1933. T.H. Engelbrecht thought that the Swedish coastal region was marked by the use of the horse and chariots after the end of the Stone Age. These provided them with a superiority in fighting and they made full use of it - and it reflects itself in the expansion of the Indo-Germanic speeches. This region was, therefore, to be considered as a claimant to being the original home of the Indo-Europeans.

One of the views that have dominated the minds of a large band of people is that of Penjka, who believed in the Scandinavian countries being the original home of the Aryans. It also emphasized the superiority of the race that represented the culture of these ancestral folk, and gave rise to the mythical 'Herrenvolk' theory of central Europe, which had put the whole world out of gear for quite a long time. The theory has been thoroughly discredited, even by an appeal to arms. But the echoes have not entirely died down, and to-day almost no one, except, K.F. Wolff, lends any measure of support to the theory.
The theory of the central German cradle comprising Jutland or central Germany, of the Aryans owes itself primarily to G. Kossinga and H. Hirt. Their main argument is based on the close links of the Finno-Ugrian speech as well as of the Lithuanian to the primitive Indo-European tongue as to suggest a vicinity of the habitat of these languages to the original home. It is a linear successor of the idea of the Scandinavian cradle, and is now no more supportable than its Scandinavian counterpart, though it is possible that the original home lay not very far from the suggested Central European scene.

P. Giles introduced the theory that Hungary was the original home of the Indo-Europeans on the principal argument that the Indo-Europeans were nomads and were not expected to stay in one place, and, in consequence, their language was simple. In reality no substantial argument has been advanced by Giles in support of his theory, and it does not stand the test of the standards applied, howsoever inadequately, to assess the original home of the Aryans.

J. de Morgan expressed the view that Siberia in north-east Asia was the original home of the Aryans at a time when Europe was passing through the Ice Age, and Siberia had semi-tropical conditions. After the glacial period, the Centum speaking people moved westwards into Europe into the Danube region. The
Satem speaking people moved instead towards Persia, and later to India. Even Morgan concedes, though as a later phase, Central Asia as the cradle of the Aryans. Morgan's theory of the Siberian home is clearly subjective and does not lend itself to any objective support.

The consensus of opinion has now veered to the theory of an Asiatic home of the Aryans, and the region lies anywhere between South-Russia and North-West India, with the rather vague, though differently interpreted zone of Central Asia heading in popularity, not without an occasional neighbourly swing to Europe.

It was Nehring who first propounded the theory of the South-Russian home, and he was joined in the view by several others in succession for one or more reasons which have been stoutly and ably defended. Nehring felt that the region of the original home extended naturally also towards the west making an inroad into Europe.

O. Schrader also suggested South-Russia as the original home of the Indo-Europeans. From the steppes to the south of Russia the people wandered and then moved on to Turkestan, thence to Khokand and Badakhshan. Thereafter they split up into two groups, one coming to India through the Kabul valley, and the other to East Persia.
H. Peake and H.J. Fleure have placed the original home of the Aryans not only in South-Russia but also in the steppes lying further to the east.

This distinguished team is joined by Grierson, Gordon Childe, B.K. Ghosh, Richard Hauschild, and Brandenstein among others. The argument in favour of this view, which appear by far the most plausible, will be examined at some length in their proper place. Meanwhile the other remaining views should claim the attention first.

E. Forrer held the view that the Proto-Indians dwelt for long in Eastern Armenia on the Caspian Sea, preparatory to their movements to the south-east and the east, having come over the Caucasus.

Paul Kretschmer was of the opinion that the ancestors of the Aryans dwelt in the Mitanni area or Mesopotamia, before they advanced over the Zagros mountains into India through Gedrosia.

Two other principal views in regard to the Central Asian home of the Aryans are by E. Meyer and E. Herzfeld, respectively. E. Meyer felt that the ancestral home lay in the Pamirs, while Herzfeld traced, 'Eranvej' or 'Aryanam Kshatram' to the valleys of the Oxus and Jaxartes, or the Amu Darya and Syr Daria, respectively, draining into the Aral Sea.

Heine Geldern stated, "The main bulk of the Indo-Aryans had resided since the first half of the second millennium B.C. in Kurdistan, Armenia, North-West
Jarl Charpentier said "that the home of the Indo-Europeans was in Asia and in that part of the vast continent, where were found wide grasslands on which to roam about with their herds of cattle and horses, where the climate was temperate or, at times, a cold one, and where were found the animals usual in such a zone and among the trees the birch, the willow and the fir tree. No part of Asia answers quite to this description except the regions to the east of the Caspian Sea, which are generally called Central Asia, with the neighbouring plains of Turkestan, where, formerly, conditions of living were far easier. It is in these parts and perhaps also in a region a little to the north of them - that according to my opinion roamed the nomadic tribes speaking Indo-European with their horses, cattle and wagons."

E. Horowitz stated that the forefathers of the Hindus and Parsis lived in Balkh and Babel.

A.H. Sayce held that Asia Minor and Mesopotamia were the original home of the Indo-Aryans.

Aurel Stein opined that the migration of the Aryans took place from the direction of Anatolia.

In this context the views of Leonard Wooley regarding the original home of the Hittites, who belonged to the Centum branch of the Aryan family, as having lain in the southern Caucasus region, as evidenced by the occurrence of Khirbet Kerak pottery, points to the trend from a region to the north of
an interesting theory, regardless of its merits, as it indicates a more northerly habitat with reference to Anatolia or Mesopotamia and points in the direction of South Russia. Yet another scholar, F.E. Pargiter, believed strongly in an original home in the middle Himalayan region to the north and outside India, whence they came into India, and settled, before groups of them moved out to Iran or the Mitanni kingdom. His theory almost borders on an Indian home for the most ancient Aryans. Of this latter view there are many protagonists. They believe with Pargiter in invasions from India into Iran as well into Mesopotamia during the Mitanni period, and explain these evidences in the light of an Indian home in origin for the Aryans.

T. Burrow is of the view that it is not possible to arrive by comparison at any unitary language which may have been the parent of the Indo-European languages. Its original habitat can at best be expressed in terms of widely separated boundaries, but not pin-pointed in the form of a restricted country. It did not, however, extend to the east beyond the home of Finno-Ugrian, which has links with the Tocharian of Asia, marked by the river Volga and the Ural mountains. The possible area of the original home lay, therefore, in the central portion of Europe extending from the Rhine to the central and southern parts of Russia. The different
linguistic groups of the Indo-European family split in the original home itself and spread to different parts of the world not in their pristine form, but in the developed and separated forms.

It is also to be noted that the old Indo-Iranian language as revealed in the Avestan text and the inscriptions of the Achaemenid rulers is remarkably near to the languages of the Rigveda and the two groups cannot, therefore, really be separated by a wide margin of time. Against this background it must be remembered that the earliest traces of the Aryan language in the Mitanni kingdom, which such a prior contact with the Iranians and Indo-Aryans, are dated to about 1500 B.C. The Persians and Medes are referred to in the Assyrian inscriptions of the 10th century B.C., by which time they had been well settled. Thus the date of the Indo-Aryan immigration would come to, according to Burrow, to about 1700-1400 B.C., and the period of the composition of the Rigveda to circa 1200-1100 B.C., with an adequate margin backwards or forwards.

The separation of the Indo-Aryans and the Indic-Iranians would, on this showing, have taken place slightly earlier. "The special relations of the Indo-Iranian with the Satem group of languages and with Balto-slavonic, in particular, together with evidence of contact between it and Finno-Ugrian in the primitive Indo-Iranian period, point to its original location in South-Russia. The presence of the Aryans in the
Near East in the middle of the second millennium B.C., can best be explained by an invasion from this quarter. The major migrations, however, took place to the East, from a region north of the Caspian Sea, and resulted in the major portion of the Aryan tribes being concentrated in what is now Russian Turkestan. From there Iranians and Indo-Aryans separately penetrated into Iran and India. It is only at this period that a common Indo-Iranian, albeit with dialected divisions, divides into two branches, Indian and Iranian."

The late B.K. Ghosh has considered the existing views on the original home of the Aryans comprehensively and has established that the cradle lay in a region equi-distant from Hittite, Asia Minor and North-West India, i.e., in Central Asia, as the Hittites appear in the west about 1950 B.C. and the beginnings of the Vedic culture can be traced back to at least 2000 B.C. The simultaneous presence of Indo-Europeans in two such widely separated regions would lead to the conclusion that their original common home was somewhat equi-distant between the two regions. This region lay in the south of the Russia, as earlier suggested by Nehring, Schrader and others. The prime consideration in this assessment is, of course, the reasonableness of the argument that the region should be approximately equidistant from Turkey and North-West India to account for such divergent dispersals. The movement should have begun about 2500 B.C., as the first incursion
of the Hittites are known to have taken place about 2400 B.C., when they settled in Cappadocia, but definitely before 1950 B.C., the date of the emergence of the Hittites in Asia Minor. The westward move of the Mitannis, who represented the undifferentiated (Vedic) Aryan way of life, must also have started long before 1450 B.C., the initial date of Sausatar. This would point to an earlier date in consonance with the prime splitting up of the Indo-Europeans.

The second consideration is the preponderance of Indo-European elements in the Finno-Ugrian language. It would imply vicinity for the parental Indo-European home. The third consideration is, of course, the archaic character of the Lithuanian, which, inspite of its earliest literature being dated to the 14th century A.D., is considered to be the nearest to the original Indo-European tongue. The original home could not, therefore, be far from the present day habitat of the Lithuanians either. Such a region is the steppe land to the south of Russia. This is corroborated also by the occurrence of Indo-European elements in the Semitic language. This implies that the Semites were in contact with the early Indo-Europeans. Therefore, the original habitat of the Indo-Europeans should have been somewhere in the neighbourhood of the Semites as well. All these point to the region stated above, within easy reach of the Lithuanians, Finno-Ugrians, and Hittites alike.
The discovery of Tocharian, a Centum dialect of the Indo-European, in Eastern Turkestan is yet another contributory argument in favour of the theory of a South Russian home.

Ghosh has also met the arguments of the protagonists of the theory of an Indian home of the Aryans. The galaxy of scholars holding this view includes the late MM. Ganganath Jha, D.S. Triveda, L.D. Kella and A.C. Das. The main argument in favour of this theory is the lack of any reference to an earlier home outside India in the Rigvedic literature, and that the geographical background of the Rigveda is laid in North-West India. The former standpoint is probably not entirely true as the river name Sarasvati, which was the river 'par excellence' in Vedic India, appears to be a phonetic variation of the name Harahvati, known in Iran, as well as the mention of the Dāses and Dasyus, as standing for Daha and Dahae, in the Rigveda, also known from Iran. The mention of Hariūpya is possibly an equivalent for Harīob, in Afghanistan, and (see pp. 230-232) Yavayāvati stands for the Zhob of to-day.

Secondly, parts of the Rigveda appears to have been composed considerably after the settlement of the Aryans in India, and by that time they had been almost so fully naturalized as to rule out memories of the earlier home.
The same protagonists seek to explain the presence of the Aryan elements in Mesopotamia among the Mitannis as the result of a later colonization by the Aryans from India. This is unlikely as, in that case, it cannot be explained why the Aryans had not Aryanized the whole of India, nearer home, to begin with, and the chronological aspects are not also reconcilable.

This is also sought to be proved by the considerations of the chronology of the emergence of the Aryan culture in India, outlined below.

* * * * * * * * *

The two important points to determine in respect of the movement of the Aryans towards India are, (i) the date of their emergence in India, and (ii) the route they took.

Though there is no agreement among scholars about the route, the evidence of the intimate connection between the Indo-Aryans and Indo-Iranians is amply clear. This is construed by the parallelism in the languages of the old Persian and the Rigvedic as well as by the parallelism in the religions of the two countries inspite of the schismatic nature of the Iranian or Zoroastrian religion. These factors by themselves imply close affinities resulting from living together for a considerably long time in Iran or outside. The bifurcation appears, on the whole, to have taken place in Iran itself. This is indicated by the allegedly obvious preference of the Rigvedic Iranian Aryans for names with which they were familiar as stated above. In this context it may also be stated that the controversial aspect of the date of Zoroaster
has not disappeared, but from a consideration of different accounts, he cannot be placed earlier than 465 630 B.C. Archaeology has shown that the most virile extraneous culture that emerged on Iranian soil before Zoroaster was the culture of Sialk VI, B, which has, therefore, to be associated with the Aryans. The bifurcation came obviously between circa 1200 and 630 B.C.

The fact that the sound 'S' which changes in 'H' in old Persian remains unchanged as late as 775 B.C. points that the bifurcation could not have taken place very much earlier than this date. On linguistic grounds Ghosh dates both the Zendavesta and the Rigveda to circa 1000 B.C.

(vii) Date of the Aryan Immigration into India and of the Composition of the Rigveda.- The earliest date so far suggested for the Rigvedic culture is 25,000 B.C. 468 Tilak considered the date to be 10,000-800 B.C. 469 Jacobi also believed in the near accuracy of Tilak's date scheme and suggested 4500- 2500 B.C. D.N. Mukhopadhyaya has felt that the period 2500-750 B.C. should be considered proper for the revolutionary doctrines of the Buddha and Mahavira to emerge in reform of the Vedic concepts of religion. Pargiter considered the Aryan immigration to have taken place about 2000 B.C.

The sheet-anchor of the chronology is, of course, provided by the date of the Boghazkoei document of the treaty between the Hittites and Mitannis, i.e., 1365 B.C., and generally of the date of commencement
of Mitanni rule in West Asia. It has been endeavoured
to indicate that the Rigvedic way of life began about
2000 B.C., on the basis of the firm date of the Hittite
incursion into Asia Minor. As most scholars are agreed
that the Indo-European words of the Boghazkeui treaty
and other Mitanni documents are characteristic of a
period when the Indo-Aryans and Indo-Iranians had
remained undifferentiated, a date earlier than 1450 B.C.,
and as near to 2000 B.C., as possible, as the probable
date of the cultural life is probably acceptable.

It has also been sought to establish that the
claims made for the Harappa civilization to be Aryan
are not tenable. The Aryan immigration is clearly
a post-Harappan affair. Walter Fairservis (Jr.) has
suggested circa 1200 B.C., as the probable terminal
date of Harappa. Heine-Geldern has also suggested
the date of 1200-1000 for the Aryan immigration into
India. The fact of the tumult and upheaval caused
by the Thraco-Phrygian invasion of Asia Minor which
took place about 1200 B.C., reflecting itself in
widespread folk movements in all directions has been
mentioned earlier. Its effect on the Aryan
immigration into India can on this ground be
suggested.

The date of the Boghazkeui document would also
lend credence and support to the date of the Aryan
immigration into India. Against this background, it
is not surprising that Ghosh has suggested 1000 B.C.
for the composition of the Rigveda as well as for the old Persian language. One of the objections to such a low dating has been the rather short time-lag for the schisms or revolts introduced by Buddhism and Jainism to arise in against the established order. A period of 400 years should indeed be fairly long for the reformatory religious revolutions introduced by the Jina Buddha or Jain in India and by Zoroaster in Iran. It may also be borne in mind that the Vedic way of life had a longer duration than indicated by the suggested date scheme. This cannot really be a serious consideration, as the results were not actually against the religious thoughts, but against the rituals and attendant practices, in all the cases.

That the Iranians and Rigvedic Aryans once lived together can be stated to be beyond dispute. The Iranian pantheon as contained in the Zend Avesta contain the following names, which have their Vedic counterparts akin in sound, viz., Ahura = Varuna, Mithra = Mitra, Verethghna = Vritrahan, Naonhaitya = Nasatya, Yema = Yama, Haoma = Soma.

Among geographical names occurring in the old Persian inscriptions, the form Harahuvatis ish compares with Sarasvatī with the interchange of 'S' and 'H' sounds, and Haraiva compares with Sarayu. While in the Achaemenian empire these names have been identified with the provinces, Arachosia and Asia.
(modern Herat), respectively, in the Rigveda they appear to have been transferred to names of rivers in the Rigveda. The Iranian river name Ranha has its Rigvedic equivalent in Rasa. The names Parthava, Parsu, Parsava, Prithu-parśavah, and Balhika occurring in the Atharva Veda, which have indeed parallels in the form of Parthava, Parsa and Bakhtrish, respectively, in the old Persian inscriptions, have been taken by some scholars to stand for Parthians, Persians and Bactrians (of Balkh) respectively. Regardless of the correctness of the suggested identification, these suggest a close connection between the Iranians and Indians, and, as Macdonell and Keith would put it, "At most the only conclusion to be drawn is that the Indians and Iranians were as was actually the case. Actual historical contact cannot be asserted with any degree of probability."

Likewise the name Rasa apparently of a river in the extreme northwest of the Vedic territory has its Iranian parallel in Rehā mentioned by the Vendidad, often sought to be equated with Araxes or Jaxartes. Even taking the sense of 'sap' or 'flavours of the waters', it would stand for a river and form another instance of Indo-Iranian contact.

While the form of Indian province is Hapta Hindu in the Avesta, Rigveda has the form Sapta Sindhava. Yasht mentions Us-Hindava, a mountain identified
with Hindukush, Varu-Kasha, a mythical sea, Uparisaena, identified with Paropanisus, Bakhdhi equated with Bactria, Harqiva with Herat, Veskreta with Kabul, Gandhara ≠ Rawalpindi and Peshawar Districts with Harahvaiti ≠ Arachosia, Haetumant ≠ Helmend.

Linguistically, the contact between the old Iranian and the Rigvedic languages was quite close. Winternitz is of the view, "The dialect on which the Ancient High Indian is based, the dialect as it was spoken by the Aryan immigrants in the North-West of India, was closely related to the Ancient Persian and Avestic and not very far removed from the primitive Indo-Iranian language. Indeed the difference between the language of the Vedas and this primitive Indo-Iranian languages seems to be less, perhaps than that between the Indian languages Sanskrit and Pali."

B.K. Ghosh stated, "The ancient Aryan culture of Iran was thus hardly distinguishable from the ancient Aryan culture of India. And that is as it should be, for both were derived from one and the same Indo-Iranian culture."

All this would plead for a bifurcation in Iran itself.

This is indicated further by the considerations of the route by which the Aryans may have come into India.
(viii) **Route of Aryan immigration into India.** It was Gordon who stated emphatically that the Aryans, regardless of the identification of their original home, lived in Iran before their final emergence on Indian soil. To quote his words, "..... it is postulated that as far as India and its borderlands are concerned the Indo-Aryans came from Iran, no matter where their previous habitat may have been, and that they came partly from the north via Herat and from Kirman via Qila-i-Bist converging on Kandahar, partly, as shown by the remains at Shahid-tump, via Persian and Baluch Makran. To avoid the series of mountain ranges that spread fanwise from the region of Kabul, the likely lines of approach would have been the Tochi, Gomal and Kurram valleys, of which last two are mentioned in the Rigveda."

Walther Wuest, writing in his paper on the age of the Rigveda has considered the question of the route of the Indo-Aryans at some length and has found himself in agreement with the several possible routes as stated below. One possible route lies over the Zagros through south Iran and Gedrosia to the lower Indus, as suggested by P. Kratschmer. He points out that Semiramis, Cyrus and Alexander also used this route in later times. He has cited W. Geiger, who has pointed out the great importance of the Zagros route in that it afforded access to the tableland of Iran. Geiger has also pointed out the-
the difficulties of the route along the edge of the border hills of South Persia.

Yet another possible route is through the middle part of Iran - around Dasht-i-Lut in the south of Kevir in the north - over Kirman and thence to Sistan.

E. Herzfeld favours a route - over Baghdad, Kermanshah, Hamadan (Echatana), Tehran (Ragai), Chorassan (Herat), Kandahar and Kabul to Panjab or to the Quetta region over a southern pass.

Yet another variant of the route is Baghdad - Susa-Fars, Kerman, Dasht-i-Lut, Helmand with a possible bifurcation either to the Panjab or to Baluchistan.

A possible route through Bampur in Gedrosia may have led as well to the Las Bela region.

A route to Kabul - Chazni and Kandhar - would bifurcate towards the Panjab as well as towards the south-east in the direction of the Bolan Pass.

Wuest, in agreement with Hillebrandt, favours the theory of an entry into India effected through the Bolan Pass and seeks to buttress the suggestion by reference to the tribe Bhalana in Rigveda, VIII, 18, 7, with whom the Aryans won an early conflict, on the grounds of the phonetic similarity of the names.

Grierson thought that the Indo-Aryans came first into Afghanistan and entered India through the Kabul valley in several waves.
Brunhofer endeavoured to show that the scene of the Rigveda was Iran and Afghanistan, a point further indicated by the transference of names of rivers and people. C. Huesing is in agreement with Brunhofer, and emphasizes the point with a reference to the names in question, namely, Parthava, Parsu, Sarasvati, Rasa.

P. Kretschmer's view that the Indo-Aryans passed over the Zagros through Gedrosia into India, has been referred to above. The intercession of Gedrosia on the route is influenced by the parallelism of Pura (= city) with Bampur occurring in Gedrosia, as indicated by Argyan.

Charpentier thought that "The Indo-European movement did perhaps start with the Indo-Iranians moving towards the south and crossing the Jaxartes, thus entering the fertile province of Sogdiana. From Sogdiana their way lay across the Oxus into Bactria, where they may perhaps have dwelt for some considerable time, ere one branch of them struck towards the south-west, directing itself against Media and Mesopotamia, while other hordes took to the south-easterly way and invaded India through the pathways of the extreme north."

Heine-Geldern, expressing himself on the course of Aryan immigration into India, states, "the Vedic Aryans reached India by way of Northern Iran and Turan, where they came in touch with the
Sir Aurel Stein considered the question at some length and he indicated three possible routes of the Aryan immigration into India through the Indo-Iranian borderlands, which run over a length of some 1200 miles from the north-east to the south-west. This area could be divided into three zones, namely, (a) the northern, containing the Khyber Pass and the Kabul valley, (b) the central, covering the Bolan, Khojak, Kurram, Tochi and Gumal passes, and (c) the southern, flanked by the mountain regions of the Kalat, running north-south, parallel to the Indus, but containing the open Makran coast. While the high mountainous walls in the northern zone would hardly encourage any flourishing settlement or civilization, allowing, however, passage through the gaps to the moving bands, the central zone was according to Sir Aurel Stein far more suitable for vast ethnic movements.

Stein, who traced the Aryans to Anatolia, was categorical that from this direction only two routes were possible. One of these lay over Azerbaijan – Elburz to the wide plains of central Asia between the Oxus and the mountains bordering Khorasan and ultimately to the north of the central deserts of Iran. The other route, to the south, over broad plains of Bakhtian, Kurdistan, Luristan, the Bakhtian country, Arabistan, valleys of Fars and Kerman and thence to Gedrosia,
Sistan, Arachosia, Kandahar and Ghazni. Stein believed that the Aryans came by this route and entered India through the central zone, mentioned above. He sought even to seek a corroboration of this central route of entry by the sequence in which the rivers are described in the Nadi Stuti of the Rigveda, wherein the list begins with the Ganga and travels towards the north-west. This last interpretation cannot be accepted as correct, as the sequence of the rivers is obviously the outcome of the settlement in the land, and follows the direction in which the composer views the land and rivers. This cannot really be held as reflexive of the course of ethnic or folk movement of the Aryans into India.

Regardless of the route chosen by the Aryans, on which the last word remains yet to be said, it is inescapable that the Aryans passed through Iran in the course of their movement towards India. To quote Stein, "There could never be any doubt for serious students that these tribes, who called themselves Aryans in distinction from the original inhabitants of the land whom they fought and subdued, reached the Indus and the land of five rivers beyond it from the west and across the Indo-Iranian border region. We have the clearest evidence of this in the fact that in the territories immediately adjoining this region westwards we find established from the earliest times a population speaking languages derived from the eastern Iranian tongue, which in its oldest form
preserved by the Avesta, the sacred Zoroastrian texts, is so closely akin to Vedic Sanskrit as to appear almost like a dialect."

(viii) The Aryans were acquainted with the Use of Iron before their Immigration into India. - In view of the Aryans and Iranians living together for a considerably long time, and the passage of the latter through Iran on their way to India, it was impossible for the Aryans to be blind to the use of iron objects in peace and war, contemporaneously in vogue in Iran. The advantages of this metal were too obvious even at this stage of its technological development to be ignored. It is also likely that they employed this metal themselves. If so, it should not be difficult to concede that the Aryans would take time to settle down in their new home in India, having overcome their initial difficulties, before they could set out to look for the ores to set up their own industries as much to meet their needs of daily life as to furnish themselves with the sinews of war, success in which was the principal means of self-preservation and expansion.